

THE RELATIVE EFFECTIVENESS OF PAPER-PENCIL TEST,
INTERVIEW, AND RATINGS AS TECHNIQUES
FOR PERSONALITY EVALUATION* ¹

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A. THE PROBLEM

The purpose of this investigation is to study the effectiveness of the three techniques commonly employed for collecting data to be used in evaluating personality adjustment. The three techniques are:

(a) The group paper and pencil testing situation that is represented by most testing procedures in which a group of persons is tested at one sitting and usually under the direction of one individual. This testing technique represents a common method of personality evaluation utilized in schools. The paper-pencil responses pertain only to the two tests used in this study.

(b) The interview technique portrays the personality appraisal approach resorted to by most specialists as psychologists, clinicians, and counselors. This technique endeavors to diagnose personality characteristics on the basis of verbal responses, appearance, individual testing, personal contact, and the like. The interview technique as used in this study consisted of a personalized administration of each test during which time ample opportunity was given the student to discuss his understanding of the test situations and the nature of responses made to them.

(c) The rating technique is an effort to depict the personality traits of an individual through an analysis of the past and of the immediate reactions of a person to environment and to stimuli. The rating technique has perhaps the broadest application of any of the appraisals for it is applied to the evaluation of personality attributes, ideational aptitude, academic achievement, economic status, mechanical skills, and sundry other types of data. The information obtained about the subject at the interview along with the past knowledge of pupil behavior formed the basis for the experimenter's ratings of the student. The experimenter rated each subject immediately after the interview. No teacher was asked to rate a student unless he or she was well

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acquainted with the subject's personality characteristics. Because the teachers recommended the students for the experiment and because many of the teachers were acquainted with the students even in the elementary and intermediate grades, no difficulty was experienced in meeting this rating stipulation.

People frequently question the effectiveness of many of the personality evaluating techniques utilized in guidance programs. Since guidance practice generally relies upon the use of one personality evaluating technique, it is essential to know which technique provides the most effective diagnosis of student adjustment not only in the school situation but in other environments as well. It becomes necessary therefore to attack the problem of effective personality measurement through more than one technique.

While the reliability and the validity of some personality evaluating techniques has been separately determined for each procedure, they have seldom been determined in conjunction with each other. Before certain types of personality tests, interview, and rating techniques may be incorporated into formal guidance programs, it is important that their utility be justified in the light of their effectiveness in personality analysis. Greater exploration is imperative in order that we may understand the merits and the demerits of many of the personality evaluating tests and personality evaluating techniques. The various methods employed for obtaining the personality evaluations will form the basis of determining the relative effectiveness of the respective techniques through their contribution to the composite variable as derived through these techniques. The degree of effectiveness of each technique will in turn be determined by the contribution of its weight to the composite trait.

B. THE PROCEDURE

In order to make this study possible, a common schedule of personality traits and of adjustment had to be used. The personality schedules of the California Test of Personality and of the Woody Student Inquiry Blank were made directly upon a sheet containing a five-point scale of evaluation. In the case of ratings, the definitions of the traits furnished with each personality test served as the basis for obtaining estimates on these individual traits which were made directly upon a sheet containing a five-point scale of evaluation. Hence, the parents, the teachers, and the experimenter rated traits and adjustment as excellent, above average, average, poor, and very poor. The group paper-pencil test results and the interview results were likewise condensed to this same five-point scale for final evaluation.

C. THE COLLECTION OF DATA

The personality evaluation procedure began with the testing of 100 students in grades 10-12 at Fordson High School, Dearborn, Michigan, during the second semester of the 1941-42 school year and the first semester of the 1942-43 school year. These students were divided into two study units of 50 each. The first unit of 50 students was administered the Woody Student Inquiry Blank in a group through the usual paper-pencil personality evaluation technique. This initial test was in turn followed by a personal interview at which time the same form of the test served as the basis of the personality evaluation. As an additional check, this first unit of 50 students was also given the machine-scoring edition of the California Test of Personality, Secondary Series, Form A, in which instance it was administered individually as an interview. The group administration of the California Test of Personality was given last to the first unit of 50 students.

The second unit of 50 students followed the evaluation techniques of the first unit in reverse order. The second unit received first the individually administered Woody Student Inquiry Blank as a personal interview and when this procedure was completed the same 50 students were then tested as a unit through the customary paper-pencil group situation. The procedure for administering the California Test of Personality was likewise changed for this second unit of 50 students for the test was given first to the group as a whole and later followed by an interview administration. Through the variation of evaluation techniques, it was believed that a more adequate analysis of these techniques could be made and achievement differences due to test repetition somewhat minimized. In addition stereotyping of evaluation processes was thereby avoided, which helped to screen the intent of the experiment as well as aided in securing coöperation.

The California Test of Personality, Secondary Series, purports to measure 12 personality components and three areas of adjustment. The first six personality components are named self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, freedom from withdrawing tendencies, and freedom from nervous symptoms. The total of these individual scores yields the self adjustment score which provides an index of the individual's personal security. The remaining six components are named social standards, social skills, freedom from anti-social tendencies, family relations, school relations, and community relations. The total of the latter six scores yields the social adjustment score which depicts the individual's feelings of social security. A total of the 12 component scores yields a total adjustment score which represents the individual's balance between self and social adjust-

ment. The authors (6) report coefficients of reliability of .904, .908 and .931 respectively for the self, social, and total adjustment measures of the California Test of Personality.

The Woody Student Inquiry Blank purports to evaluate traits of social adaptability, dominance, inferiority, coöperativeness, self-assurance, resourcefulness, seclusiveness, and phantasy. From the above scores one obtains an evaluation of adjustment to home life, school life, and social life. In addition an evaluation of vocational interests and attitudes called vocational orientation is likewise secured. Unlike the California schedule, the Woody test provides no overall adjustment score except as indicated by adjustment to the four major areas. The author (7) reports a reliability coefficient of .92 for the Woody Student Inquiry Blank.

D. THE ANALYSIS OF DATA

Before definite conclusions may be drawn from data presented in this investigation, it is first necessary to determine if any of the personality evaluation results are influenced by such extraneous factors as school achievement or intelligence. This information is of utmost importance since it may disclose the degree of bias which such factors impose upon any quantitative treatment of data in this study. To determine the ultimate effectiveness of evaluation of the group paper-pencil test, the interview, and the ratings, one must first analyze the results in the light of the above factors. Tables 1 and 2 portray the influence of two factors, school achievement and intelligence, upon the evaluation of student adjustment.

TABLE 1
CORRELATIONS BETWEEN SCHOOL ACHIEVEMENT AND THE MAJOR UNITS OF THE CALIFORNIA TEST OF PERSONALITY AND OF THE WOODY STUDENT INQUIRY BLANK AS EVALUATED THROUGH THE INSTRUMENT, THE INTERVIEW, AND RATINGS OF THE EXPERIMENTER, THE TEACHERS, AND THE PARENTS

California Test	Test	Inter.	Exper.	Ratings Teach.	Parents
Self Adjustment	.11	.08	.22	.41	.23
Social Adjustment	.12	.07	.28	.45	.27
Total Adjustment	.08	.06	.25	.35	.30
<i>Woody Inquiry</i>					
Home Life	.08	.20	.34	.48	.24
School Life	.22	.22	.46	.49	.58
Social Life	.21	.13	.12	.35	.22
Vocational Orientation	.17	.04	.31	.47	.32

The following tables itemize the quantitative analysis of data. Since the number of cases (100) remained constant throughout this study, the Pearsonian correlation coefficients will permit a uniform interpretation of relationships as governed by the limits of probable error. For purposes of comparison, a coefficient of $.30 PE \pm .061$ will indicate more than a slight relationship, while a coefficient of $.40 PE \pm .057$ will indicate a marked relationship among variables. Garrett (2) states that a low r should be at least five or six times its probable error for a small degree of correlation. The nature of data, it is felt, likewise justifies the use of the above applications to the probable error of correlation.

The correlation between school achievement and each of the major units of the California Test of Personality which include the self-adjustment, the social adjustment, and the total adjustment evaluations of the student as obtained through the usual paper and pencil testing procedure and as obtained through the interview technique yield low coefficients of correlation. Little difference in the above relationships is found to exist when they are analyzed from the standpoint of the technique employed. The correlations between school achievement and each of the three major units of the California Test of Personality when pupil adjustment is rated by the experimenter and when rated by the parents, show somewhat higher coefficients of relationship. The correlation of school achievement with teachers' estimates of student self, social and total personality adjustment provides respective coefficients of .41, .45, and .35. The numerical value of these coefficients indicates that teachers reflect the influence of academic success in their ratings of student personality adjustment. One may therefore expect in this study that the ratings of teachers on the above adjustment will be influenced to some extent by the academic

TABLE 2

CORRELATION BETWEEN INTELLIGENCE AND THE MAJOR UNITS OF THE CALIFORNIA TEST OF PERSONALITY AND OF THE WOODY STUDENT INQUIRY BLANK AS EVALUATED THROUGH THE INSTRUMENT, THE INTERVIEW, AND THROUGH RATINGS OF THE EXPERIMENTER, THE TEACHERS, AND THE PARENTS

California Test	Test	Inter.	Exper.	Ratings Teach.	Parents
Self Adjustment	.13	.26	.15	.28	.14
Social Adjustment	.10	.19	.23	.24	.16
Total Adjustment	.13	.03	.26	.19	.15
<i>Woody Inquiry</i>					
Home Life	.09	— .06	.41	.36	.15
School Life	.14	— .09	.45	.32	.39
Social Life	.15	.02	.21	.37	.08
Vocational Orientation	.06	— .15	.28	.34	.18

ability of the student being rated. Students possessing better scholastic averages will to some degree be rated by teachers as possessing the more superior personality characteristics on the basis of that average alone.

The correlation of school achievement with each of the four principal parts of the Woody Student Inquiry Blank, home life, school life, social life, and vocational orientation, shows in Table 1 low relationships for the personality results obtained by the group paper-pencil testing technique and by the interview technique as well.

The correlation between ratings of the student by the experimenter on each of the four units of adjustment of the Woody schedule and school achievement as well as the correlation between parent ratings of progeny personality adjustment on the same variables and school achievement produce more than slight relationships with but one exception. In that instance, the correlation of parent ratings of school adjustment with school achievement, the coefficient of .58 for these variables possibly designates that school adjustment of the student is interpreted by the parent as meaning academic achievement. Since the reactions to school life as measured by the Woody Student Inquiry Blank envelop school associations in general rather than the ability to assimilate academic knowledge, the correlation coefficient of .58 between parental ratings of student behavior with actual student academic accomplishment seems to be definitely loaded by academic success. This rating tendency on behalf of parents will influence in this study any results associated with the school life unit of the Woody Student Inquiry Blank. Consequently any analysis of techniques or numerical relationships will embody academic achievement whenever parental ratings of school life are correlated with related traits. The experimenter and the teacher reflect this tendency to a lesser but marked degree with coefficients of .46 and .49 for the same comparisons. A similar trend is noted between teachers' estimate of pupil vocational orientation and school achievement as the relationship between these two variables is .47.

From the above correlation coefficients one may infer that evaluation of student self, social or total adjustment of the California test does not involve intelligence irrespective of the evaluating technique employed. Hence in all subsequent analysis of data bearing upon this adjustment, one may disregard the influence of ideational ability.

The relationship of intelligence to home, school, and social life and to vocational orientation evaluations fails to disclose any significant relationships for data obtained by the Woody blank and by the interview technique. The relationship of intelligence to parental ratings of student adjustment on

home life, social life, and vocational orientation also indicates slight relationships. Table 2 presents the numerical relationships among these variables.

The correlation between parental ratings of student school life with intelligence is .39, which relationship is consistent with parental ratings of the same adjustment with school achievement portrayed in Table 1. The above relationships indicate that school life is evaluated by the parents on the basis of factors conditioning school adjustment such as intelligence. Teacher ratings of student adjustment on the four units of the Woody blank when correlated with intelligence exceed on the whole the coefficients obtained through the other techniques and indicate more than slight relationships among these variables.

E. SUMMARY OF ZERO ORDER OF CORRELATIONS ON TRAITS DEFINED BY THE CALIFORNIA TEST OF PERSONALITY

1. *Test versus Interview*

The correlation of the California Test of Personality group paper-pencil test results with the interview results discloses a range of coefficients from .79 for the family relations trait to .45 for the sense of personal freedom trait. Variables which correlate highly through the same methods of evaluation include freedom from withdrawing tendency, total adjustment, community relations, self-adjustment, and freedom from nervous symptoms which yield coefficients of .77, .73, .73, .72, and .70 respectively. Traits which correlate the lowest through the results gathered by the same techniques include social standards, sense of personal worth, and sense of personal freedom with respective coefficients of .48, .50, and .45. The above relationships represent gross similarities and dissimilarities in trait evaluation by the two techniques. If the above as well as the remaining coefficients in this table could be corrected for attenuation, all relationships on the whole would be higher.

The coefficient of .73 between the two total adjustment scores is sufficiently high to indicate that from the standpoint of evaluation, the interview technique, despite its uniqueness, contributes results comparable to the group paper-pencil test. This relationship brings forth a query about the feasibility of contributing time and effort to a personalized administration of a measure when equally favorable appraisals may be made through the ordinary group paper-pencil testing procedure. From the point of view of guidance service to a school personnel, the paper-pencil group testing approach permits diagnoses which otherwise would remain untouched or unnoticed.

2. *Test versus Ratings*

The correlations of the group paper-pencil test results with experimenter, teacher, and parent ratings reveal in most instances within-chance relationships among the variables. This leads one to surmise that the individuality of raters affects results in a different manner when compared to the test-interview evaluations in the preceding summary. The test-rating techniques evaluate family relations with marked relationships as shown by the coefficients of .85, .74, and .71 for the test-parent, test-teacher, and test-experimenter ratings respectively. The freedom from withdrawing tendencies trait also correlates highly showing respective coefficients of .58, .46, and .56 for the results obtained by the same procedure. The remaining relationships are considerably removed from the above. The test-parent ratings correlate lowest for the traits of sense of personal worth and of social standards with coefficients of .05 and .10 for these variables. The test-teacher ratings correlate lowest on the traits of freedom from nervous symptoms, freedom from anti-social tendencies, and feeling of belonging with respective correlations of .03, .08, and .08. The test-experimenter ratings correlate lowest with coefficients of .08 and .10 for the traits of sense of personal freedom and of school relations. The low relationships may suggest that the above traits remain abstract or intangible to the various raters. The overall results likewise infer that adjustment in most instances whether it is self, social, or total is more positively identified by the group test and by the raters than are the individual personality components which formulate this adjustment itself. Perhaps this is not difficult to explain since less overlap exists in rating adjustment *per se* than in rating its constituent components. The use of the same test items by the authors of personality measures for the revelation or composition of several different traits is appropriate testimonial to this statement.

3. *Interview versus Ratings*

A comparison of the interview results with the individual ratings fails to unfold any distinct differences for this unit of correlation when compared to the group paper-pencil test and rating evaluations. The latter correlations as shown in Table 3 are on the whole noticeably lower than those for the test-interview and somewhat lower than those of the test-rating evaluations. One significant trend is noted among the coefficients. It is found that the community relations trait correlates .71, .67, and .58 through the interview-parent, interview-experimenter, and interview-teacher ratings. On the whole the range of correlations is much greater in this section of zero relationships since negative correlations are introduced for the first time. The interview-

TABLE 3
THE INTERCORRELATION OF RESULTS AS OBTAINED BY THE VARIOUS TECHNIQUES ON
TRAITS DEFINED BY THE CALIFORNIA TEST OF PERSONALITY

California	Test vs. Inter.	Test versus rating of		Interview versus rating of		Exp. vs. Teach.		Exp. vs. Teach.		Average
		Exper.	Parent	Exper.	Teach.	Parent	Teach.	Parent	Parent	
<i>Self Adjustment</i>	.72	.38	.18	.26	.23	.32	.17	.37	.35	.32
Self Reliance	.54	.27	.31	.36	.19	.19	.40	.36	.34	.32
Sense of Per. Worth	.50	.31	.10	.15	-.01	.02	.18	.06	.26	.15
Sense of Per. Freed.	.45	.08	.12	.08	.14	-.10	.13	.03	.29	.13
Feeling of Belonging	.55	.21	.08	.16	.05	.24	.00	.24	.18	.19
Withdrawing Tendency										
(freedom from)	.77	.56	.46	.27	.11	.20	.08	.36	.12	.35
Nervous Symptoms										
(freedom from)	.70	.39	.03	.26	-.08	.19	.06	.26	.23	.22
<i>Social Adjustment</i>	.61	.27	.32	.27	.27	.33	.27	.14	.41	.32
Social Standard	.48	.30	.20	.34	.22	.18	.18	.26	.26	.25
Social Skills	.66	.36	.34	.33	.25	.17	.16	.17	.39	.31
Anti-Social Tend.										
(freedom from)	.63	.20	.08	.32	.10	.19	-.02	.09	.14	.19
Family Relations	.79	.71	.74	.34	.20	.21	.23	.08	.57	.47
School Relations	.57	.10	.26	.02	.26	.23	.18	.25	.45	.27
Community Relations	.73	.21	.21	.67	.58	.71	.13	.09	.23	.38
Total Adjustment	.73	.28	.17	.28	.12	.33	.15	.26	.34	.30

experimenter ratings range from .02 to .67 in relationship with an average relationship of .28, while the interview-teacher ratings range from .08 for the sense of personal worth trait to $-.58$ for the community relations trait. Interview-parent ratings range from $-.10$ for the sense of personal freedom trait to .71 for the community relations. Once again it seems that adjustment is easier to rate than are most of the allied sub-traits, indicating perhaps that raters are able to recognize adjustment more so than they are able to rate the individual sub-traits when ratings are studied in the light of the interview results.

4. *The Intercorrelation of Ratings*

This intercorrelation of ratings reveals that parent-teacher ratings surpass the remaining correlations on 10 traits of personality, seven of which form the entire social adjustment personality schedule of the California test. These 10 characteristics along with their correlation coefficients are given as follows: family relations, .57, school relations, .45, social adjustment .41, social skills, .39, total adjustment .34, sense of personal worth .26, sense of personal freedom .29, social standards .26, community relations .23, and freedom from anti-social tendencies .14. Since seven of the above items compose the entire section of the social adjustment ratings, it may be stated that the teacher and parent as shown by the above evaluations agree more closely upon the social traits of the subjects than do the experimenter and parent, or experimenter and teacher, when the above coefficients are studied in the light of all the ratings summarized in Table 3. This is readily understood since the parent and teacher possess sufficient occasion to observe student reactions in sundry social situations. The remaining interrelationships among the ratings leave little to choose in the way of significant evaluation of the self-adjustment evaluation schedule as evaluated by the different combination of ratings. The teacher and parent agree more closely on the self-adjustment traits of personal worth and of personal freedom. The experimenter-teacher ratings correlate .40 on the trait of self-reliance, which discloses a marked relationship. The parent-experimenter and the teacher-parent combinations likewise rate this trait somewhat highly with coefficients of .36 and .34 respectively. Other ratings show similar relationships. For example, the experimenter-parent ratings of the self-adjustment trait correlate .37 while the teacher-parent estimate correlates .35. The experimenter-parent correlation of .36 for the estimate of the freedom from withdrawing tendency differs markedly from the other two evaluations for this trait as given in Table 3.

F. SUMMARY OF THE ZERO ORDER OF CORRELATIONS ON TRAITS
DEFINED BY THE WOODY STUDENT INQUIRY BLANK

1. *Test versus Interview*

A study of the test-interview results as given by the coefficients of correlation in Table 4 shows on the whole a much lower relationship among the four major units of the Woody Student Inquiry Blank, i.e., home life, school life, social life, and vocational orientation than it does for the component sub-traits. Two of the major units, home life and school life, produce coefficients of .19 and .20 for the results obtained through the test-interview evaluating procedures. The other two major units, social life and vocational orientation, correlate .33 and .31 for the two sets of results. Since the interview procedure afforded ample opportunity for the student to analyze his responses, some decrease in the degree of relationship may be expected due to the multiplicity of answers possible on the Woody Student Inquiry Blank. The coefficients of determination for these techniques of .04 for home life, .04 for school life, .11 for social life, and .10 for vocational orientation reiterate this possibility. When the results are therefore compared in the light of the techniques employed, the group test-interview results will introduce greater variance because of the occasion to discuss the meanings of test items along with the multiple responses possible in the Woody test.

The correlation of results of the test-interview techniques on the various sub-traits of the Woody Student Inquiry Blank signifies that the trait of social adaptability correlates the highest with a coefficient of .55 and is followed in turn by the coefficient of .49 for the trait of self-assurance. Closely following the above coefficients in value are the relationships for the test-interview analysis on the traits of inferiority and of coöperativeness with coefficients of .43 and .40 respectively. This result may disclose that students estimate this trait with some degree of consistency when the results are obtained through the above techniques. The traits of phantasy, dominance, and seclusiveness when evaluated in the same manner correlate .37, .36, and .34 in that order. It should be noted that the above test components are of an asocial nature and the size of the coefficients intimates that students are not as sure of themselves and their reactions to test situations bearing upon same as they are of such traits as social adaptability, coöperativeness, and self-assurance.

2. *Test Results versus Ratings*

With but two exceptions, the correlations of group tests results with ratings on similar traits of adjustment and of personality extend below .30. School

TABLE 4
THE INTERCORRELATION OF RESULTS AS OBTAINED BY THE VARIOUS TECHNIQUES ON THE
ADJUSTMENT AND PERSONALITY TRAITS DEFINED BY THE WOODY
STUDENT INQUIRY BLANK

Woody Student Inquiry Blank	Test vs. Inter.	Test versus rating of		Interview versus rating of		Ratings of		Average
		Exper.	Teach.	Parent	Exper.	Teach.	Exper. vs. Teach.	
Home Life	.19	.14	.07	.08	.21	.12	.04	.17
School Life	.20	.11	.07	.37	.05	.19	.26	.28
Social Life	.33	.23	.17	.12	.03	.03	.07	.21
Vocational Orientation	.31	.05	.11	.20	-.22	-.17	.03	.10
Social Adaptability	.55	.26	.20	.27	.39	.16	.20	.28
Dominance	.36	.03	-.07	-.06	.21	-.19	-.06	.02
Inferiority	.43	-.28	.00	-.14	-.17	.00	.19	.00
Cooperativeness	.40	.27	.09	.18	.20	.05	.03	.16
Self-assurance	.49	.16	.13	.30	.18	-.17	.16	.21
Resourcefulness	.26	.21	.09	.26	.10	.07	.10	.26
Seclusiveness	.34	-.17	-.08	-.11	-.11	-.07	-.02	.02
Phantasy	.37	-.14	-.21	-.26	-.15	-.13	-.08	.13
Average	.35	.07	.05	.10	.06	-.01	.04	.14

life results as compiled by the group test and by the ratings correlate .37 with parental estimates of adjustment on same. Parents to some extent substantiate the student's reactions to school life in general. Teacher estimates and those of the experimenter correlate .07 and .11 for the same variable. The latter coefficients reveal wide differences of opinion regarding student-experimenter understanding of adjustment. The same trend occurs among the correlations for the traits of self-assurance, social adaptability, and resourcefulness in which cases the student-parent relationships are expressed through higher coefficients of correlation than they are for the remaining comparisons of the teacher or of the experimenter ratings with the group paper-pencil test results. Parental ratings agree more closely with student test results on such traits and adjustment as home life, self-assurance, social adaptability, and resourcefulness than do the teacher or the experimenter ratings. The correlations of the ratings of the experimenter with the group test results indicate a lower relationship of .23 and .27 for the social life and for the coöperativeness traits. These coefficients however surpass those obtained for the teacher-student and for the parent-student evaluations on the same characteristics of adjustment. The group test results, when correlated with the separate ratings, designate the teacher estimates of personality adjustment in practically all instances as possessing the least amount of relationship. This tendency may reflect the influence of other factors in the ratings of the teacher, as e.g., school achievement or intelligence, which summaries were presented in Tables 1 and 2.

3. Interview versus Ratings

The study of the interview-rating correlations discloses some minor differences in the results as compared to the group test-rating correlations. The coefficients in this unit are as a whole lower than those given in the preceding summary. The parent rating-interview results correlate .26 on the characteristics related to school life, situations while the experimenter rating-interview results correlate .39, .21, and .20 for the traits of social adaptability, dominance, and coöperativeness. Here, as in the foregoing summary, the teacher ratings show the least degree of correlation with the interview ratings.

It is evident that such traits as inferiority, seclusiveness, and phantasy likewise produce negative relationships between the test or interview results and ratings. This tendency may point out that traits of the introversion type are more difficult to estimate and survey through these procedures than are those of the extroversion type. The above results may likewise display an existence of overlap of function among such traits as phantasy, seclusiveness,

and inferiority. If one considers the social nature of responses to test items of this type, it is possible to surmise that the differences between these traits are difficult to grasp inasmuch as all possess a common element, that of withdrawal in the social situation.

4. *Intercorrelation of Ratings*

The intercorrelation of ratings on adjustment of the students to home life, school life, and social life as well as ratings on vocational orientation provide higher and more significant relationships among the results on the whole than do the correlations for the estimates of the component sub-traits.. The experimenter-teacher ratings correlate .41, .48, and .33 on adjustment to home life, school life, and social life. The experimenter-parent ratings correlate .58 and .50 on adjustment to school life and to social life. The teacher-parent ratings correlate .49 and .30 on adjustment to school life and on vocational orientation. If a correlation of .30 or above is to denote a limited relationship among the variables, then all of the above coefficients are sufficiently high to interpret the relationships among these ratings as possessing some meaning in evaluation. These correlations show that social life of the student is rated about the same by the experimenter and by the teacher as it is by the experimenter and parent. Home life adjustment correlates the highest in the experimenter-teacher ratings. Vocational orientation of the student as rated by the teacher and parent surpasses the correlation of ratings of the experimenter and parent or experimenter and teacher. In this latter relationship, the teacher and parent seem best informed or agree more closely about the vocational outlook of the student. All three combinations of ratings, as already stated, agree significantly upon the adjustment of the individual to school life in which instances the coefficients of relationship exceed .47.

The intercorrelation of ratings on the individual personality components of the test show little agreement among the results. In no two ratings do the intercorrelation results attain a value of .30 on the same trait. The experimenter-teacher estimates of student seclusiveness and of self-assurance correlate .31 and .38 in that order. Limited significance may be attached to the above coefficients. The experimenter-parent ratings correlate .33 and .49 for the traits of social adaptability and of resourcefulness. The teacher-parent ratings on the separate personality traits fail to correlate above .26

G. THE PRACTICAL EVALUATION OF THE PRESENT TECHNIQUES

For reasons of lack of an independent criterion variable, the ordinary methods of multiple correlation and least squares cannot be used for purposes

of evaluating the various personality trait-determining techniques generally utilized in studies of this nature. However, a solution can be found if a criterion variable is created in the form of a composite measure by linearly combining the several measures through a suitable set of weights. From the previous discussion it is more expedient to use a composite which maximizes the stability of the ordering of individuals by such a composite or which at the same time minimizes the various measures for the same individuals. Evaluation in every case amounts to the determination of proper weights for each of the variables for purposes of their linear combination. The sets of weights which will produce such a composite can be found by methods proposed either by Horst (3) or by Edgerton (1) and Kolbe. Since either method is too laborious, Hotelling's (4) iteration or Horst's approximation methods are used instead.

H. THE RELATIVE EFFECTIVENESS OF THE TECHNIQUES IN EVALUATING TRAITS ASSOCIATED WITH THE CALIFORNIA TEST OF PERSONALITY

Table 5 portrays the various weights assigned to the respective evaluating techniques in respect to a composite yielding maximum-between or minimum-within-individual variance. The composite is the resultant of the inter-relationship of the components and the actual or effective weights derived through the different personality evaluating procedures. The relative effectiveness of a technique may be interpreted as meaning the contribution of a weight to the total maximum-between or the minimum-within individual personality variance. The most effective evaluation of a technique will be defined as the maximum contribution of a weight to the composite variable while the least effective evaluation will mean the minimum contribution of a weight to the composite variable. In the following paragraphs we have a summary of the evaluations of the various personality components associated with the California Test of Personality.

1. Summary of Self Adjustment

Self-adjustment as defined in this study denotes feelings of personal security. An analysis of the evaluations as studied through the five separate appraisals indicates that self-adjustment and its component sub-traits are most effectively measured by the group paper-pencil technique. For five of the seven items of the entire self-adjustment schedule of traits utilized in this study, the group paper-pencil test yields the most effective evaluation. In the two remaining instances, that of self adjustment itself and that of the

TABLE 5
WEIGHTS OF VARIOUS TECHNIQUES IN THE LIGHT OF A COMPOSITE YIELDING MAXIMUM-
BETWEEN OR MINIMUM-WITHIN VARIANCE ON TRAITS DEFINED BY
THE CALIFORNIA TEST OF PERSONALITY

California Test	Test	Inter.	Exper. rating	Teach. rating	Parent rating
1. <i>Self Adjustment*</i>	1.26	1.29	1.01	.80	1.00
<i>a. Self-reliance</i>	1.12	1.09	1.14	1.06	1.00
<i>b. Sense of personal worth</i>	1.41	1.18	1.22	1.10	1.00
<i>c. Sense of personal freedom</i>	1.31	1.16	.97	1.24	1.00
<i>d. Feeling of belonging</i>	1.09	1.08	.87	.70	1.00
<i>e. Withdrawing tendencies</i> (freedom from)	1.49	1.04	1.01	.78	1.00
<i>f. Nervous symptoms*</i> (freedom from)	1.69	1.56	1.24	.21	1.00
2. <i>Social Adjustment</i>	1.15	1.12	.87	1.02	1.00
<i>a. Social standards</i>	1.16	1.24	1.15	1.04	1.00
<i>b. Social skills</i>	1.32	1.20	1.00	1.06	1.00
<i>c. Anti-social tendencies</i> (freedom from)	1.31	1.43	1.02	.83	1.00
<i>d. Family relations</i>	1.51	.94	.87	1.01	1.00
<i>e. School relations</i>	1.00	.92	.69	.95	1.00
<i>f. Community relations</i>	1.05	1.62	.92	.94	1.00
Total Adjustment*	1.23	1.29	.80	.64	1.00

*Hotelling's approximations; the remaining are derived through Horst's method.

component of self-reliance, the differences between the most effective evaluation and the group paper-pencil test results are insignificant. Therefore, from the viewpoint of the most effective evaluation, the group test situation is the best. Moreover, for consistency and validity of a technique when evaluated in the light of a composite, the group test provides the best index to self adjustment. The teacher ratings which give the lowest weights to four of the seven parts of the self adjustment schedule, provide limited contributions to an effective or functional personality evaluation. This is shown not only in the differences between teacher ratings and test results but between the other ratings as well. If teacher ratings are used because of expediency, they will offer little positive aid to aspects of student self adjustment unless they are abetted by the results of some objective measure or some other independent rating. Just keeping records for the sake of justifying guidance adds no value to a program unless it is first determined what teacher ratings contribute if anything to the whole picture. This is necessary not only to justify the time devoted to such activity but also it becomes essential in fairness to the student to know just what is being rated and how effectively it is being done.

2. *Summary of Social Adjustment*

A summary of the evaluations of all components allied with the social adjustment section of Table 5 discloses an equal distribution of the most effective appraisals between the group paper-pencil technique and the interview technique. Inasmuch as the differences between the most effective appraisal and the group test are small, with the exception of the trait of community relations, the group test may be utilized for the evaluation of components appendant to the social adjustment section of the California test. Since several of the techniques yield results in proximity to the most effective one, it may be permissible to use one of them for the prediction of results. Richardson (5) is quoted on this issue as follows:

In connection with weighting, it is necessary also to state that the various methods of combining variables are not inferior substitutes for the multiple regression techniques. The multiple regression methods are by no means to be regarded as the prototype of methods of combining variables.

3. *Total Adjustment*

The total adjustment of the student or the balance between self adjustment and social adjustment is most effectively evaluated by the group paper-pencil test. The interview technique, as shown by its weight in Table 5 provides almost as effective an appraisal of this adjustment. In this respect the parent occupies a central place among the evaluations since the experimenter and finally the teacher contribute the least to this evaluation. The teacher ratings are about half as effective in identifying the overall adjustment of the student when compared to the evaluations of the group test or of the interview technique. The experimenter surpasses somewhat the evaluations of the teacher ratings. If teacher ratings of student adjustment are to carry some meaning in guidance, additional orientation on some aspects of the problem will appear necessary if guidance is to be of a functional type. Inasmuch as the group paper-pencil test provides the most effective weights in 10 of the 15 personality items evaluated in this unit, the use of this technique is justifiable from an administrative viewpoint in that it provides guidance material on a maximum number of students with a minimum use of time.

I. THE RELATIVE EFFECTIVENESS OF THE TECHNIQUES IN EVALUATING TRAITS ASSOCIATED WITH THE WOODY STUDENT INQUIRY BLANK

Table 6 summarizes by techniques the most effective evaluation of composite adjustment and of composite traits allied with the Woody Student

TABLE 6
WEIGHTS OF VARIOUS TECHNIQUES IN THE LIGHT OF A COMPOSITE YIELDING MAXIMUM-
BETWEEN OR MINIMUM-WITHIN VARIANCE ON TRAITS DEFINED BY THE
WOODY STUDENT INQUIRY BLANK

Woody Student Inquiry Blank	Test	Inter.	Exper. rating	Teach. rating	Parent rating
1. Home Life	.99	1.03	1.31	1.17	1.00
2. School Life	.65	.63	.82	.83	1.00
3. Social Life	.96	.75	.94	.92	1.00
4. Vocational Orientation	.97	.55	.73	.85	1.00
5. Social Adaptability	1.17	1.19	1.15	.92	1.00
6. Dominance	1.69	1.76	1.46	1.22	1.00
7. Inferiority	1.21	1.29	1.06	1.47	1.00
8. Cooperation	1.33	1.16	1.21	.96	1.00
9. Self-assurance	1.06	.85	1.03	.79	1.00
10. Resourcefulness	.87	.72	.98	.80	1.00
11. Seclusiveness	1.05	1.25	1.06	1.35	1.00
12. Phantasy	.85	1.15	1.11	1.09	1.00

Inquiry Blank. Parent ratings are found to evaluate most effectively adjustment to school and social life and vocational orientation. Parent ratings make one additional effective evaluation, i.e., the personality trait of resourcefulness. The experimenter evaluates most effectively adjustment to home life.

The distribution of the effective evaluations by individual techniques discloses no particular pattern among the results. The interview procedure evaluates most effectively the traits of social adaptability, dominance, and phantasy, while teacher ratings contribute most effectively to the evaluations of the traits of inferiority and of seclusiveness. The traits of cooperativeness and of self-assurance are most effectively evaluated through the group paper-pencil testing methods. Parents evaluate most effectively the trait of resourcefulness. From the above summary it is not to be assumed that only the above techniques are able to evaluate functionally the respective personality traits. The proximity of many of the results suggests that reliable and valid evaluations for practical purposes may be obtained through other techniques. Table 6 presents fully the relative effectiveness of each technique in evaluating the composite. Insight into the effectiveness of one technique in evaluating the composite or the effectiveness of one technique in relation to another when evaluating the same trait may be derived through the relative proximity of the quantitative values presented in this table.

Since the teacher and the parent ratings each contribute three of the least effective evaluations of the composite, they monopolize this tendency among the techniques. The teacher evaluates least effectively the traits of social adaptability, cooperativeness, and self-assurance while the parents rate least

effectively the traits of dominance, inferiority, and seclusiveness on the basis of a composite variable. The interview technique furnishes the least effective evaluation of the trait of resourcefulness while the group paper-pencil test evaluates likewise the phantasy personality trait.

From the above analysis parents are the most effective appraisers of adjustment. However, the ability of the parents terminates at this point, inasmuch as they contribute but one most effective evaluation in the remaining eight personality components found in this schedule.

J. IMPLICATIONS

Personality evaluation seems to be confused. This may in part be due to the various handicaps that originate within the techniques themselves and which bear directly upon the psychometric analysis of this thesis. As seen in the study, acute differences exist between the results of the group test and those of the ratings. The former technique evaluates drives, urges, frustrations, and the like while the latter approach evaluates, in most cases, observed or interpreted behavior within a localized environment. The contiguity of the two sets of results as delimited by the approaches suggests confusion, inasmuch as the low correlations in most instances designate limited trait relationships.

The ratings of the students by the different raters on various types of adjustment disclose the influence of extraneous factors upon these ratings. If correlations involve the ratings of the experimenter, the teacher, or the parent they will mirror the effect of extrinsic factors as school achievement or intelligence. The teacher ratings are loaded most with these factors, the experimenter ratings second, and the parent ratings the least.

The group paper-pencil testing technique and the interview technique are less influenced by other factors. If one wishes to minimize or to eliminate the effect of such extraneous factors as school achievement or intelligence upon personality evaluation, one should resort to the use of the paper-pencil test or of the interview.

From the basis of a composite measure, as much difference exists between the group paper-pencil and interview results as exists between each of the above techniques and ratings or between the ratings themselves. Therefore, to level negative criticism against any one technique or against any one result is to do so without a knowledge of the limitations of the other. If on one hand a contribution of a paper-pencil test is to divulge student mental and behavior make-up, we can justify their utility for they are found reliable enough for this purpose. If on the other hand we desire to utilize paper-

pencil tests from the standpoint of validity, we are justified in doing so on traits to which the test results contribute significantly to the composite measure. If further validation is needed, group paper-pencil test results should be used for those personality traits in which significant contributions to the composite are made, not only by the group test results but by some other technique as well. Significant contributions are made by ratings to the composite trait which surpass or approach the values contributed by the group test or the interview technique. Hence further validation may be seen in closely related contributions to the composite trait.

What factors other than statistical are inherent in a well-defined personality test? From a student's point of view a test should incorporate the psychological factor of awareness of action or of habit. It should also provide facility of response. For functional purposes a personality test should minimize the influence of extrinsic factors upon test results.

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